CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

CLEANUP AND ABATEMENT ORDER No. R5-2009-XXXX

FOR

BAILEY MINERALS CORPORATION, TERHEL FARMS, INC., MAGMA POWER COMPANY, CORDERO MINING COMPANY, RICHARD L. MILLER, HOLIDAY FOUNDATION INC., SUNOCO ENERGY DEVELOPMENT COMPANY, HOMESTAKE MINING COMPANY, BONNEVILLE INDUSTRIES, INC., FILIATRA, INC., ASERA WESTERN CORPORATION, AMERICAN LAND CONSERVANCY

CENTRAL, CHERRY HILL, EMPIRE, MANZANITA, AND WEST END MINES
COLUSA COUNTY

This Order is issued to Bailey Minerals Corporation, Terhel Farms, Inc., Magma Power Company, Cordero Mining Company, Richard L. Miller, Holiday Foundation Inc., Sunoco Energy Development Company, Homestake Mining Company, Bonneville Industries, Inc., Filiatra, Inc., Asera Western Corporation, and American Land Conservancy (hereafter collectively referred to as Dischargers) based on provisions of California Water Code (CWC) section 13304, which authorizes the Central Valley Regional Water Quality Control Board (Central Valley Water Board or Board) to issue a Cleanup and Abatement Order (Order), and CWC section 13267, which authorizes the Central Valley Water Board to require the submittal of technical and monitoring reports.

The Executive Officer of Central Valley Water Board finds with respect to the Dischargers' acts or failure to act, the following:

1. The Central, Cherry Hill, Empire, Manzanita, and West End Mines (hereafter "Mines") are inactive mercury and/or gold mines. Mining waste from the Mines erodes into Sulphur Creek, which is tributary to Cache Creek. The Sulphur Creek streambed and flood plain directly below the Mines contains mining waste. The Mines have discharged and continue to discharge or threatens to erode mining waste into waters of the state, where it has created or threatens to create a condition of pollution or nuisance.

2. The Mines are located in the Wilber Springs hydrothermal area of the Sulphur Creek Mining District (District) of Colusa County, and about 20 miles west of Williams, California. The Mines are located within Colusa County Assessor's Parcel Numbers 018-200-002-000, 018-200-013-000, 018-200-014-000, 018-200-015-000, 018-200-016-000, 018-200-017-000, 018-200-018-000, 018-200-004-000, 018-200-005-000, and 018-200-007-000, in Sections 28 and 29, Township 14 North, Range 5 West, Mount Diablo Base and Meridian (MDBM), as shown in Attachment A, a part of this Order.

3. Mining waste has been discharged at the Mines since mining activities began in the late 1800s. Mining waste has been discharged onto ground surface where it has eroded into Sulphur Creek, resulting in elevated concentrations of metals within the creek. Mining waste discharged onto ground surface has not been evaluated for its potential impact to ground water. The Dischargers either own, have owned, or have operated the mining sites where

the Mines are located and where mining waste has been discharged. In its current condition, mining waste is causing or threatens to cause a discharge of pollutants to waters of the state.

4. The Central Valley Water Board's *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan) states: "By 6 February 2009, the Regional Water Board shall adopt cleanup and abatement orders or take other appropriate actions to control discharges from the inactive mines (Table IV-6.4) in the Cache Creek watershed."

5. The parties listed in Attachment B, which is incorporated herein and made part of this Order, are known landowners, operators, or leaseholders of the Mine site as determined by Central Valley Water Board staff's review of property records from the Colusa County Recorders Office. All the parties named in this order either owned the site at the time when a discharge of mining waste into waters of the state took place, or operated the mine, thus facilitating the discharge of mining waste into waters of the state. The parties named in this Order as Dischargers are known to presently exist or have viable successor.

6. This Order may be revised to include additional Dischargers as they become known, and may include former owners and operators listed in Finding No 5.

Mining History

7. Copper, mercury, sulphur, and gold were all discovered in the District in the late 1800s, and the Mines were developed during that period. This information is described in the *CalFed-Cache Creek Study, Task 5C2: Final Report. Final Engineering Evaluation and Cost Analysis for the Sulphur Creek Mining District*, prepared by Tetra Tech EM Inc., September 2003 (hereafter CalFed Report).

The Central and Empire Groups

8. The Central and Empire mines are located near the Wilbur Springs resort. The Central Mine Group lies to the north of Sulphur Creek and is made up of the historic Central, Dewey, and Little Giant mining claims. The Empire Mine Group lies to the south of Sulphur Creek and is made up of the historic Empire, Mercury Queen, Mercury King, and Hidden Treasure lode mining claims (CalFed Report).

9. Mining started at the Empire mine in the 1870s and at the Central mine in 1891. In 1873, sixty-three flasks of mercury (one flask equals 76 pounds) were produced from ore mined at the Empire mine, but processed at the Wide Awake mine. Sometime between the 1890s and the early 1900s, the Central and Empire groups were operated in conjunction with the Abbott mine. Therefore, it is possible during this time that ore from Central and Empire groups was processed at the Abbott mine facilities. After this period, no significant production from the Central Group occurred until 1926 when $10,000 worth of mercury (about 107 flasks) was produced. After that, the mines were idle until a small production was reported in 1942. No information was found on any operations after 1942. Total production was approximately 170 flasks. (CalFed Report).

10. The workings of the Central and Empire mines are now caved but are reported to include several hundred feet of underground drifts and crosscuts. The workings of the Central Mine consisted of four short adits, the highest about 400 feet above Sulphur Creek. The Empire Mine may have included at least three adits that where up to 150 feet long (Moisseeff 1966). A small processing facility remains at Central Mine, and a small retort remains at Empire Mine (CalFed Report).

The Manzanita Mine Group
(including the Cherry Hill, West End and Manzanita Mine Sites)

11. The Manzanita mine is located about one mile west of Wilbur Springs resort. The Manzanita mine has been operated for both gold and mercury over its history. The Cherry Hill gold mine is located southwest of the Manzanita mine and on the south side of Sulphur Creek. The West End gold mine is located on the north side of Sulphur Creek west of the Manzanita mine (CalFed Report).

12. The Manzanita mine was discovered in 1863 and operated as a gold mine for many years (up to 1891). Cinnabar was recovered as a byproduct. From 1902 to 1942, it became primarily a mercury mine with intermittent operations by various companies and lessees, and yielded over 2,500 flasks of mercury. The mine may have been operated in conjunction with the Cherry Hill mine on the south side of Sulphur Creek in the 1920s. No records separating mercury and gold production are available prior to 1900 (CalFed Report).

13. The Manzanita mine consists of numerous tunnels and shafts, most of which are caved and inaccessible. Currently there is one open adit about 45 feet above the floodplain and there are several small open cuts, no more than 50 feet in depth between the adit and the top of the hill. Near the top of the hill is an open vertical shaft of unknown depth. Tailings appear to be exposed in the north stream bank of Sulphur Creek and there is a concrete foundation that may have been part of a crushing facility and stamp battery west of the adit (CalFed Report).

14. At the Manzanita mine, a ten-stamp mill was used to crush the ore, which was then concentrated in blanket sluices followed by two combination pans using sodium amalgam and bluestone amalgam. Three 5-foot Huntington mills, seven Victor concentrators, three 5-foot amalgamating pans, two 8-foot settlers, a No. 1 Gates crusher, and a 65 horse-power engine and boiler were reportedly operated for gold and mercury extraction (CalFed Report).

15. The Cherry Hill Mine workings consist of two short adits that have a maximum length of about 100 feet. The West End mine workings consist of three adits, the extent of which is unknown. The workings at the Cherry Hill Mine are open and accessible. The adits at the West End Mine are equipped with grates to prevent access by humans (CalFed Report).

16. Gold production records for the Cherry Hill Mine are incomplete. Gold production records are not available for West End Mine as this mine was likely operated in conjunction with Cherry Hill Mine. There is no evidence that either mine produced mercury (CalFed Report).

17. Ore processing facilities at the Cherry Hill mine consisted of a stamp mill with coarse gold recovery tables. There is no reported processing operation at the West End Mine. West End ore was reported to be very siliceous and similar in milling quality to Cherry Hill ore and it is inferred that processing of West End ore was done in the Cherry Hill stamp mill. Currently, only various pieces of iron from the mill and concrete foundations remain at Cherry Hill Mine. The mill foundations may be of historical significance (CalFed Report).

Mining Waste Description and Characterization
Central and Empire Group

18. Conspicuous waste rock piles with topographic relief are absent at the Central and Empire Mines. However, the slopes above and below the Central mine have a local hummocky appearance and are covered with thick grasses that may conceal small waste piles. In addition, the ground upon which the brick retort is located may contain up to 1,000 cubic yards (CY) of a mixture of tailings and waste rock. In addition, up to 1,000 CY of overburden or waste rock may be present below the cuts above the rotary furnace. Waste rock is also exposed in the slope below the retort at the Empire Mine but it is inconspicuous due to the vegetation. The total volume of this pile may be up to 5,600 CY (CalFed Report).

19. In 2002, Churchill and Clinkenbeard sampled solid materials at the Central and Empire mines. Mercury concentrations were measured at six locations at the Central Mine, and at two locations at the Empire Mine. Results showed mercury concentrations of 150 to 420 parts per million (ppm) in soil and waste materials near ore processing units, and 30 ppm in calcined tailings piles. Complete characterization of background soils and mining waste at the Central and Empire Mines has not been performed (CalFed Report).

20. Churchill and Clinkenbeard (2002) calculated that less than 3 kilograms (kg) of mercury remains in the small calcined tailings pile at the Central Mine, and 700 kg of mercury remains in two waste piles at the Empire Mine. The estimated mercury load from Central Mine is 0.003 to 0.03 kg/yr or 0.16 % of the total mine related mercury load of 4.4 to 18.6 kg/yr to Sulphur Creek. The estimated mercury load from Empire Mine is 0.04 to 0.06 kg/yr or 0.32 % of the total mine related mercury load of 4.4 to 18.6 kg/yr to Sulphur Creek (CalFed Report).

Mining Waste Description and Characterization
Manzanita Mine Group
(including the Cherry Hill and West End Mine Sites)

21. Waste rock piles at the Manzanita Mine are sparse and are limited to the lower portion of the hill below the area of argillic alteration. Tailings are not conspicuous at the surface near the mine but tailings appear to be exposed in the bank of Sulphur Creek above Jones Fountain of Life and may be buried in the flood plain along Sulphur Creek. The estimated mercury load from Manzanita Mine is 0.3 to 6.5 kg/yr or 34.9 % of the total mine related mercury load of 4.4 to 18.6 kg/yr to Sulphur Creek (CalFed Report).

22. Churchill and Clinkenbeard (2002) conducted solid materials sampling at the Manzanita Mine. Mercury concentrations were measured at 11 locations. Results showed mercury concentrations of 6 to 560 ppm in soil and waste materials near locations believed to be former ore processing units, and 25 to 260 ppm in background soils and sediments. Analysis of solid samples showed sediment in Sulphur Creek adjacent to Manzanita Mine had a pH of 7, and mine site soils had a pH of approximately 4 to 5. Complete characterization of background soils and mining waste at the Manzanita Mine has not been performed (CalFed Report).

23. Mercury concentrations were measured at six locations at Cherry Hill Mine, and at three locations at West End mine. Results showed mercury concentrations of 47 to 300 ppm in waste piles, and less than 1 to 280 ppm in background soils and sediments. A study by Pearcy and Petersen (1990) found background mercury concentrations of up to 6,000 ppm. Complete characterization of background soils and mining waste at the Cherry Hill and West End mines has not been performed (CalFed Report).

24. Currently, there is no mine waste rock pile outside of the short adits at Cherry Hill. There is small waste rock pile (about 578 CY) on the Sulphur Creek floodplain about 500 feet northeast of the adits. This pile is of unknown origin. There is currently a waste rock pile at the West End Mine that may contain up to 3,600 CY of waste rock. Assays obtained during this study indicated gold concentrations of up to 0.30 ounces per ton (CalFed Report).

25. The estimated mercury load from Cherry Hill Mine is up to 1 kg/yr or 5.4 % of the total mine related mercury load of 4.4 to 18.6 kg/yr to Sulphur Creek. The estimated mercury load from West End Mine is 0.002 to 1.1 kg/yr or 5.9 % of the total mine related mercury load of 4.4 to 18.6 kg/yr to Sulphur Creek (CalFed Report).

Mercury and Sediment Loads to Sulphur Creek

26. Mine site investigations within the District have estimated mercury and sediment loads from the individual mine sites. Mercury is transported primarily through erosion of mercury-bearing mine wastes, soils, and sediments during storm runoff events. Though natural processes have enriched sediments with mercury, mining activities have increased sediment generation, resulting in increased potential for mercury mobilization from the mine sites (CalFed Report).

27. Annual mercury load estimates from the Mines range from 0.4 to 8.2 kg/yr. Annual sediment load estimates from the Mines range from 5,700 to 60,100 kg/yr (CalFed Report).

28. Aqueous mercury concentrations in Sulphur Creek are among the highest in the Cache Creek watershed, and remain elevated during non-peak flow periods. Active hydrothermal springs constantly discharge into Sulphur Creek, with mercury concentrations ranging from 700 to 61,000 nanograms per liter (ng/L) (CalFed Report).

29. Dissolved mercury concentrations in Sulphur Creek are significantly higher than in the Cache Creek watershed in general, and dissolved mercury comprises as much as 90 percent of the total mercury in Sulphur Creek. Dissolved mercury appears to be released by the active

hydrothermal system, whereas particulate-bound mercury in the upper Cache Creek basin comes from sediments and mercury-bearing mine waste mobilized into the creek during storms. Similar to total and dissolved concentrations, methyl mercury concentrations in Sulphur Creek are among the highest reported for the Cache Creek watershed. Methyl mercury concentrations were as high as 4 ng/L in Sulphur Creek above the confluence with Bear Creek (CalFed Report).

30. Mercury is a toxic substance, which can cause damage to the brain, kidneys, and to a developing fetus. Young children are particularly sensitive to mercury exposure. Methylmercury, the organic form of mercury that has entered the biological food chain, is of particular concern, as it accumulates in fish tissue and in wildlife and people that eat the fish. Mine waste present at this Mine may also pose a threat to human health due to exposure (dermal, ingestion, and inhalation) through recreational activities (hiking, camping, fishing, and hunting) or work at the site.

Regulatory Considerations

31. Section 303(d) of the Federal Clean Water Act requires states to identify waters not attaining water quality standards (referred to as the 303(d) list). Since 1990, Sulphur Creek has been identified by the Central Valley Water Board as an impaired water body because of high aqueous concentrations of mercury.

32. The Basin Plan designates beneficial uses of the waters of the state, establishes Water Quality Objectives (WQOs) to protect these uses, and establishes implementation policies to achieve WQOs.

33. Beneficial uses for Sulphur Creek, a tributary of Cache Creek, are: municipal and domestic supply; agricultual supply; industrial service supply; industrial process supply; water contact recreation and non-contact water recreation; warm freshwater habitat; cold fresh water habitat; spawning, reproduction, and/or early development; and wildlife habitat. In accordance with the Sources of Drinking Water Policy (State Water Resources Control Board Resolution No 88-63), the municipal and domestic supply designation (MUN) also applies to Sulphur Creek.

34. The beneficial uses of underlying groundwater, as stated in the Basin Plan, are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

35. The WQOs listed in the Basin Plan include numeric objectives, e.g., State drinking water Maximum Contaminant Levels (MCLs) that are incorporated by reference, and narrative objectives, including toxicity and taste and odor objectives for surface water and groundwater. Chapter IV of the Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that “[w]here compliance with narrative objectives is required (i.e., where the objectives are applicable to protect specified beneficial uses), the Regional Board will, on a case-by-case basis, adopt numerical limitations in Orders which will implement the narrative objectives.” The numerical limits for the constituents of concern

listed in the following table implement the Basin Plan objectives for mercury and methylmercury in Sulphur Creek.

Constituent	Limits	Type of WQO	Reference
Methyl Mercury (organic)	0.07 µg/L	Narrative Toxicity	USEPA IRIS Reference Dose (RfD) as a drinking water standard
Methyl Mercury (organic)	0.3 µg/L	Narrative Toxicity	USEPA National Ambient Water Quality Criteria (fish tissue)
Mercury (total)	0.050 µg/L	Narrative Toxicity	California Toxics Rule Human Health Protection
Mercury (inorganic)	1.2 µg/L	Narrative Toxicity	Public Health Goal

µg/L = micrograms/liter

36. The Cache Creek Watershed Mercury Program, included in the Basin Plan, requires responsible parties to develop plans to reduce existing loads of mercury from mining or other anthropogenic activities by 95% in the Cache Creek watershed (i.e., Cache Creek and its tributaries). The Basin Plan, Chapter IV, page 33.05 states that,

> Responsible parties shall develop and submit for Executive Officer approval plans, including a time schedule, to reduce loads of mercury from mining or other anthropogenic activities by 95% of existing loads consistent with State Water Resources Control Board Resolution 92-49. The goal of the cleanup is to restore the mines to premining conditions with respect to the discharge of mercury. Mercury and methylmercury loads produced by interaction of thermal springs with mine wastes from the Turkey Run and Elgin mines are considered to be anthropogenic loading.

37. The Basin Plan, Chapter IV, page 33.05 states that,

> The Sulphur Creek streambed and flood plain directly below the Central, Cherry Hill, Empire, Manzanita, West End and Wide Awake Mines contain mine waste. After mine cleanup has been initiated, the Dischargers shall develop and submit for Executive Officer approval a cleanup and abatement plan to reduce anthropogenic mercury loading in the creek.

38. The Dischargers shall be deemed in compliance with the above requirements if cleanup actions and maintenance activities are conducted in accordance with the approved plans.

39. Under CWC section 13050, subdivision (q)(1), “mining waste” means all solid, semisolid, and liquid waste materials from the extraction, beneficiation, and processing of ores and minerals. Mining waste includes, but is not limited to, soil, waste rock, and overburden, as defined in Public Resources Code section 2732, and tailings, slag, and other processed waste materials….” The constituents listed in Findings No. 18, 21,and 24are mining wastes as defined in CWC section 13050, subdivision (q)(1).

40. Because the Mines contain mining waste as described in CWC sections 13050, closure of Mining Unit(s) must comply with the requirements of California Code of Regulations, title 27, sections 22470 through 22510 and with such provisions of the other portions of California Code of Regulations, title 27 that are specifically referenced in that article.

41. Affecting the beneficial uses of waters of the state by exceeding applicable WQOs constitutes a condition of pollution as defined in CWC section 13050, subdivision (1). The Dischargers have caused or permitted waste to be discharged or deposited where it has discharged to waters of the state and has created, and continues to threaten to create, a condition of pollution or nuisance.

42. CWC section 13304(a) states that:

> Any person who has discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a Regional Water Board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the Regional Water Board, clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including, but not limited to, overseeing cleanup and abatement efforts. A cleanup and abatement order issued by the state board or a Regional Water Board may require the provision of, or payment for, uninterrupted replacement water service, which may include wellhead treatment, to each affected public water supplier or private well owner. Upon failure of any person to comply with the cleanup or abatement order, the Attorney General, at the request of the board, shall petition the superior court for that county for the issuance of an injunction requiring the person to comply with the order. In the suit, the court shall have jurisdiction to grant a prohibitory or mandatory injunction, either preliminary or permanent, as the facts may warrant.

43. The State Water Resources Control Board (State Board) has adopted Resolution No. 92-49, the *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under CWC Section 13304*. This Resolution sets forth the policies and procedures to be used during an investigation or cleanup of a polluted site and requires that cleanup levels be consistent with State Board Resolution No. 68-16, the *Statement of Policy With Respect to Maintaining High Quality of Waters in California*. Resolution No. 92-49 and the Basin Plan establish cleanup levels to be achieved. Resolution No. 92-49 requires waste to be cleaned up to background, or if that is not reasonable, to an alternative level that is the most stringent level that is economically and technologically feasible in accordance with California Code of Regulations, title 23, section 2550.4. Any alternative cleanup level to background must: (1) be consistent with the maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less than that prescribed in the Basin Plan and applicable Water Quality Control Plans and Policies of the State Board.

44. Chapter IV of the Basin Plan contains the *Policy for Investigation and Cleanup of Contaminated Sites*, which describes the Central Valley Water Board's policy for managing contaminated sites. This policy is based on CWC sections 13000 and 13304, California Code of Regulations, title 23, division 3, chapter 15; California Code of Regulations, title 23, division 2, subdivision 1; and State Water Board Resolution Nos. 68-16 and 92-49. The policy addresses site investigation, source removal or containment, information required to be submitted for consideration in establishing cleanup levels, and the basis for establishment of soil and groundwater cleanup levels.

45. The State Board's *Water Quality Enforcement Policy* states in part:

> At a minimum, cleanup levels must be sufficiently stringent to fully support beneficial uses, unless the Central Valley Water Board allows a containment zone. In the interim, and if restoration of background water quality cannot be achieved, the Order should require the discharger(s) to abate the effects of the discharge (Water Quality Enforcement Policy, p. 19).

46. CWC section 13267(b)(1) states that:

> In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

47. The technical reports required by this Order are necessary to ensure compliance with this Cleanup and Abatement Order, and to ensure the protection of the waters of the state. The Dischargers either own, have owned, or have operated the mining sites subject to this Order.

48. The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act (CEQA) (Pub. Resources Code, section 21000 et seq.), pursuant to California Code of Regulations, title 14, section 15321(a)(2). The implementation of this Order is also an action to assure the restoration of natural resources and/or the environment and is exempt from the provisions of the CEQA, in accordance with California Code of Regulations, title 14 sections 15307 and 15308. This Order may also be classified as a minor action to prevent, minimize, stabilize, mitigate or eliminate the release or threat of release of hazardous waste or substances, and is exempt from the provisions of CEQA in accordance with California Code of Regulations, title 14 section 15330.

IT IS HEREBY ORDERED that, the Dischargers, and their agents, assigns and successors, in order to meet the provisions contained in Division 7 of the California Water Code and regulations, plans and policies adopted thereunder, shall cleanup and abate, forthwith, the effects of the discharges.

"Forthwith" means as soon as is reasonably possible. Compliance with this requirement shall include, but not be limited to, completing the tasks listed below.

The Dischargers shall:

1. Conduct all work in conformance with State Board Resolution No. 92-49 Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304 and with the Regional Board's Water Quality Control Plan for the Sacramento

River and San Joaquin River Basins (in particular the Policies and Plans listed within the Control Action Considerations portion of Chapter IV).

Waste Characterization

2. By **15 December 2009**, submit a *Mining Waste Characterization Work Plan* (hereafter *Characterization Plan)* for the mine sites. The Characterization Plan shall assess the nature and extent of mining waste discharged at the site and the potential threat to water quality and/or human health. The Characterization Plan shall describe the methods that will be used to establish background levels for soil, surface water, and ground water at the site, and the means and methods for determining the vertical and lateral extent of the mining waste.

   The Characterization Plan shall also address slope stability of the site and assess the need for slope design and slope stability measures to minimize the transport of mining waste-laden soils to surface water and ephemeral streams. The Characterization Plan shall adopt the time schedule as described below in items 3 through 13 below for implementation of the proposed work.

3. Within **30 days** of staff concurrence with the Characterization Plan, but no later than **15 February 2010**, begin implementing the Characterization Plan in accordance with the approved time schedule, which shall become part of this Order.

4. By **15 June 2010**, submit a *Mining Waste Characterization Report* (hereafter *Characterization Report)* for the Mine. The Characterization Report shall include:

   a. A narrative summary of the field investigation;
   b. A section describing background soil concentrations, mining waste concentrations, and the vertical and lateral extent of the mining waste;
   c. Surface water and ground water sampling results;
   d. A section describing slope stability and erosion potential and recommendations for slope stabilization;
   e. An evaluation of risks to human health from site conditions, and;
   f. A work plan for additional investigation, if needed, as determined by staff. If no additional investigation is needed, this report shall be the Final Characterization Report.

5. By **15 June 2010**, submit a *Surface and Ground Water Monitoring Plan* (hereafter *Monitoring Plan)* for the Mine. The Monitoring Plan shall describe the methods and rationale that will be used to establish background levels for surface water and ground water at the site. The Monitoring Plan shall also address long-term monitoring necessary to confirm the effectiveness of the remedies.

Water Supply Well Survey

6. By **15 February 2010**, submit the results of a water supply well survey within one-half mile of the site and a sampling plan to sample any water supply well(s) threatened to be polluted by mining waste originating from the site. The sampling plan shall include specific actions and a

commitment by the Dischargers to implement the sampling plans, including obtaining any necessary access agreements. If the Dischargers demonstrates that exceedances of water quality objectives in the water supply well survey discussed above are the result of naturally occurring hydrothermal sources, then the Dischargers may request a waiver of requirements No. 7 and 8 listed below.

7. Within **30 days** of staff concurrence with the water supply well sampling plan, the Dischargers shall implement the sampling plan and submit the sampling results in accordance with the approved time schedule, which shall become part of this Order.

8. Within **30 days** of staff notifying the Dischargers that an alternate water supply is necessary, submit a work plan and schedule to provide an in-kind replacement for any impacted water supply well. The Dischargers shall implement the work plan in accordance with an approved time schedule, which shall become part of this Order.

Site Remediation

9. Within **90 days** of staff concurrence with the Characterization Report, submit a Site Remediation Work Plan (hereafter Remediation Plan) for the site. The Remediation Plan shall describe remediation activities to clean up or remediate the mining waste to background concentrations, or to the lowest level that is technically and economically achievable to reduce the movement of mining waste to ground water and Sulphur Creek. The Remediation Plan shall also address long-term maintenance and monitoring necessary to confirm and preserve the long-term effectiveness of the remedies. The potential remediation activities shall comply with all applicable WQOs and mercury TMDLs of the Basin Plan and promulgated water quality criteria for Sulphur Creek. The Remediation Plan shall also include:

    a. An evaluation of water quality risk assessment:
    b. A human health risk assessment:
    c. A time schedule to conduct the remediation activities.

10. Within **60 days** of staff concurrence with the Remediation Plan, submit a Site Implementation Plan (hereafter Implementation Plan), which describes the preferred remediation activity for site remediation. The Implementation Plan and the approved time schedule shall become a part of this Order.

11. Within **30 days** of staff concurrence of the Implementation Plan for site cleanup of the mining waste, the Dischargers shall commence remedial activities of the mining waste. The Dischargers shall notify staff a minimum of 72 hours prior to beginning fieldwork.

12. By **31 December 2011**, clean up and abate the effects, including threats to human health and waters of the state, of mining waste discharged from past mining activities at the Mines.

13. Within 60 days of completion of the remedial activities described in the Implementation Plan, the Dischargers shall submit a Completion Report describing the remediation and results of the cleanup work. The Completion Report shall clearly describe the installation of any

containment structures, covers and/or stabilization efforts, and any required post closure maintenance of the Mining Unit(s) described in Finding No. 40 above.

14. By **30 April 2012**, the Dischargers shall develop and submit for Executive Officer approval a cleanup and abatement plan to reduce anthropogenic mercury loading in the creek at and downstream of the mine site as described in Finding No. 37 above.

General Requirements

The Dischargers shall:

15. Reimburse the Central Valley Water Board for reasonable costs associated with oversight of the investigation and remediation of the site. Within 30 days of the effective date of this Order, the Dischargers shall provide the name and address where the invoices shall be sent. Failure to provide a name and address for invoices and/or failure to reimburse the Central Valley Water Board's oversight costs in a timely manner shall be considered a violation of this Order. If the Central Valley Water Board adopts Waste Discharge Requirements (WDRs), review of reports related to writing of the WDRs and all compliance measures thereafter would be subject to the fees required by issuance of the Order and the reimbursement under this requirement would no longer apply.

16. Submit all reports with a cover letter signed by the Dischargers. In the cover letter, the Dischargers shall express their concurrence or non-concurrence with the contents of all reports and work plans.

17. Notify staff at least three working days prior to any onsite work, testing, or sampling that pertains to environmental remediation and investigation and is not routine monitoring, maintenance, or inspection.

18. Obtain all local and state permits and access agreements necessary to fulfill the requirements of this Order prior to beginning work.

19. Continue any remediation or monitoring activities until such time as the Executive Officer determines that sufficient cleanup has been accomplished to fully comply with this Order and this Order has been rescinded.

Any person signing a document submitted under this Order must make the following certification:

> *"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my knowledge and on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."*

In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments must be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain work plans for, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology must be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Dischargers must contain the professional's signature and, where necessary, his stamp or seal.

The Executive Officer may extend the deadlines contained in this Order if the Dischargers demonstrate that unforeseeable contingencies have created delays, provided that the Dischargers continue to undertake all appropriate measures to meet the deadlines and make the extension request in advance of the expiration of the deadline. The Dischargers shall make any deadline extension request in writing prior to the compliance date. An extension may be denied in writing or granted by revision of this Order or by a letter from the Executive Officer. Any request for an extension not responded to in writing by the Board shall be deemed denied.

If, in the opinion of the Executive Officer, the Dischargers fail to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability. Failure to comply with this Order may result in the assessment of an Administrative Civil Liability of up to $10,000 per violation per day pursuant to the California Water Code sections 13268, 13350 and/or 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with CWC section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

This Order is effective upon the date of signature.

_____
PAMELA C. CREEDON, Executive Officer

_____
(Date)